

DEPARTMENT OF FOOD AND AGRICULTURE
PROPOSED AMENDMENT OF THE REGULATIONS

Title 4, Division 9, Chapter 1
Sections 4027 through 4027.5

Article 2.2
Electric Watthour Meters

INITIAL STATEMENT OF REASONS

Background

The overall mission of weights and measures is to preserve and maintain the standards of measurement essential in providing a basis of value comparison for the consumer and fair competition for industry. The principal task of weights and measures is to minimize measurement or pricing errors in commercial transactions through the establishment and enforcement of standards that can be uniformly applied in the exchange of goods and services. Adherences to these standards provide both buyer and seller an assurance of equity that is the foundation of an efficient and free market economy. An effective measurement program directly benefits all citizens of the State.

Mechanical watthour meters have been used for measuring electricity since the early 1900s. Watthour meters are used in submeter applications in apartment complexes, marinas, manufactured and mobile home communities, and other applications throughout California. The existing watthour meter code does not address specific differences between mechanical and electronic watthour meters.

Existing user requirements lack provisions to address safe and accessible meter installations and have exposed inspection officials and the public to hazards where there are no remediation requirements, enforcement provisions, or enforcement agencies. California's building codes have excluded serving utilities from installation requirements and have not separately adopted requirements for privately owned submeter installations. The Department lacks authority and expertise to develop comprehensive building code standards. In California Public Utilities Commission (CPUC) Decision D 05-05-026, the Commission recognized this dilemma and required that any new installations conform to utility company standards (Pacific Gas and Electric Company Greenbook Section 8). The proposed regulation includes certification requirements that should effectively limit new unsafe, confined, or inaccessible installations of watthour submeters and ensure that lawfully adopted tariff rules are followed before commercial use of a submeter is permitted.

The new code sections will address the Applications, Definitions, Specifications, Notes, Tolerances, and User Requirements necessary for meter manufactures, installers, users, weights and measures officials and the California Type Evaluation Program (CTEP) for mechanical and electronic watthour meters.

The Legislature has charged the Department of Food and Agriculture with responsibility of supervising weights and measures activities within California (Business and Professions Code, Division 5, Section 12100). The Secretary of the Department of Food and Agriculture is granted authority to adopt such regulations as are reasonably necessary to carry out the provisions of the Business and Professions Code, Division 5, Section 12027.

Description of the Public Problem, Administrative Requirements, or other Conditions or Circumstances the Regulations are Intended to Address

Section 12107 of the Business and Professions Code gives the Secretary authority to establish tolerances and specifications for commercial weighing and measuring devices not included in National Institute of Standards and Technology Handbook 44.

Requirements for watthour meters are not included in Handbook 44. Tolerances, specifications, and other technical requirements for mechanical watthour meters have previously been established in the California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2. Electric Watt-Hour Meters. However, technology for watthour meters has evolved to include electronic watthour meters which are not recognized in the existing regulation.

Specific Purpose and Factual Basis

The Department of Food and Agriculture proposes to Repeal Article 2.2., Electric Watt-Hour Meters, and write a new Article 2.2, Electric Watthour Meters, to recognize electronic watthour meters and include mechanical watthour meters with appropriate tolerances and specifications based on:

California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2. Electric Watt-Hour Meters.

The Application, Meter Identification, Notes, Tolerances, Definitions, and some of the Specifications sections were maintained from Article 2.2., for Mechanical Meters.

American National Standard for Electric Meters, Code for Electricity Metering, ANSI C12.1- 2001

Additional definitions, test tolerances, specifications, and notes for electronic meters were derived from this document. This is a consensus document developed: by power companies, Institute of Electrical and Electronics Engineers, Measurement Canada, National Electrical Manufacturers Association (NEMA), National Institute of Standards, and Technology.

American National Standard for Watthour Meters, ANSI C12.10-1997

Additional marking requirements for both mechanical and electronic meters were obtained from this document. This document was developed by the Accredited Standards Committee on Electricity Metering, C12.

National Electrical Manufacturers Association, Instrument Transformers for Revenue Metering (110 kV BIL and less) NEMA EI 21.1-1993

Current Transformer Nameplate markings, Accuracy Class designation, and Accuracy requirements were obtained from this document. This is a consensus document developed by: power companies, Institute of Electrical and Electronics Engineers, Measurement Canada, NEMA, National Institute of Standards, and Technology.

Handbook for Electricity Metering, ninth edition

More definitions were extracted from this document. This handbook was created by the contributions of meter manufacturers.

California Public Utilities Commission Decision D-05-05-026

This is used to cover installation practices used by serving utilities and makes installation consistent when meters are installed in submeter applications whether by the serving utility or Service Agencies (meter installers) registered with the Division of Measurement Standards.

SECTION 4027. A. APPLICATION. - This section is to specify that this code applies to newer technology electronic watthour meters as well as to conventional mechanical watthour meters. Specific section numbers are added to clarify reference to General Code requirements contained in National Institute of Standards and Technology, Handbook 44, adopted by reference in California Code of Regulations Section 4000. Additionally, clarification is provided to indicate when requirements apply only to electronic or mechanical watthour meters.

SECTION 4027.1. DEFINITIONS OF TERMS. – This section defines terms used in Article 2.2 that have special meaning as used in this code section. The definitions are necessary to provide officials, manufacturers, installers, users, and service agents with clear meanings of the terms that are used to describe specifications, testing procedures, tolerances, and user requirements.

This section incorporates definitions from the current California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2. Electric Watt-Hour Meters, American National Standard for Electric Meters, Code for Electricity Metering, ANSI C12.1- 2001, and Handbook for Electricity Metering, ninth edition

SECTION 4027.2. S. SPECIFICATIONS – This section is necessary to make clear and specific the specification requirements for meter manufacturers, service agents, and installers of electronic and mechanical watthour meters.

This section incorporates parts of the specification requirements existing in the current California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2. Electric Watt-Hour Meters; American National Standard for Electric Meters, Code for Electricity Metering, ANSI C12.1-2001; American National Standard for Watthour Meters, ANSI

C12.10-1997; National Electrical Manufacturers Association, NEMA EI 21.1-1993; and Handbook for Electricity Metering, ninth edition.

S.1. Metrological Components. This section specifies how a meter system shall be designed and constructed.

S.2. Terminals. This section applies to the arrangement of the terminals in order to minimize the possibility of short circuits.

S.3. Provision for Sealing.

S.3.1. Sealing. This subsection states the manner in which a security seal shall be applied.

Table S.3.1. Categories of Device and Methods of Sealing. This table details the format requirements for the audit trail.

S.4. Meter Identification and Marking Requirements. This section gives identification and marking requirements that are in addition to the requirements of Section 1.10. G-S.1.

S.5. Abbreviations. This section gives the abbreviations that may appear on a meter, instrument transformer, or indicator.

S.6. Instrument Transformer.

S.6.1. Identification. This subsection gives the permanent identification label information required for each instrument transformer that is non-integral with the meter.

S.6.2 Accuracy Class. This subsection lists the accuracy class for an instrument transformer that is not an integral part of the meter and is used for revenue metering.

S.6.3. Polarity Marking. This subsection states that a permanent mark is required that indicates proper installation orientation on the instrument transformer when the accuracy of the meter is affected.

S.7. (MM) Meter Register. This section states that mechanical meter registers shall clearly indicate the number of kilowatthours that are measured, that the register ratio shall be indicated on the front of the registers that are not an integral part of the meter nameplate, and that a means shall be provided for the tenant to read the meter register.

S.8. (EM) Meter Watthour Display. This section gives required information to be displayed by all electronic meters for submeters in a service system.

S.9. Multiple Meter Indicating Elements. This section states what must be provided on an indicating or combination indicating-recording element coupled to two or more meter systems.

S.10. (EM) Meter-Control Program. This section states that on electronic meters the meter control program is an integral part of the meter's firmware read-only memory that cannot be changed in its operating environment.

S.11. (EM) Data Storage and Retrieval. This section gives requirements for electronic meter data storage and retrieval.

S.12. Temperature Range for Metering Components. This section states over what temperature range the meter and/or components must be accurate and correct and that if they are not capable of meeting these requirements, then the installations shall be limited to the temperature limits stated on the meter.

SECTION 4027.3. N. NOTES. – This section incorporates the testing notes existing in the current California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2.; American National Standard for Electric Meters, Code for Electricity Metering, ANSI C12.1-2001; American National Standard for Watthour Meters, ANSI C12.10-1997; National Electrical Manufacturers Association, NEMA EI 21.1-1993; and Handbook for Electricity Metering, ninth edition. This section also defines, explains, and makes specific procedures applicable to meter tests. By defining tests and explaining the conditions of the test, manufacturers, service agents, and officials can duplicate the testing for compliance requirements.

N.1. Meter Creep Test. Conditions of the meter creep test are stated in this paragraph to provide officials with clear test parameters to ensure that meters do not register under no-load conditions.

N.2. Meter Starting Load. The meter starting load test of 0.5 amperes is stated in this paragraph.

N.3. (MM) Test Revolutions. The minimum test for a mechanical meter is stated in this section.

N.4. (EM) Meter Test Constant Output Indications. This section gives the constant output indication for full and light load tests and requires that test standards that read out directly in watthours shall meet a specified watthour equivalent.

N.5. Meter and System Test Loads. Subsections (a) and (b) list the meter and system test loads for mechanical meters and subsections (c) and (d) list the meter and system test loads for electronic meters.

N.6. Test of a Meter System. This section states that meters submitted for test shall be complete systems, the test loads to be applied, and the rated voltage for tests.

SECTION 4027.4. T. TOLERANCES. – This section incorporates the tolerance requirements existing in the current California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2. Electric Watt-Hour Meters; American National Standard for Electric Meters, Code for Electricity Metering, ANSI C12.1-2001. It states the limits of inaccuracy permitted before the meter is required to be removed from service due to inaccuracies. The section adopts the NIST Handbook 44 format for applying maintenance and acceptance tolerances as modified in CCR Section 4001, G.T.1., “Acceptance Tolerances”. Maintenance tolerances apply to equipment already in use. Acceptance tolerances apply to new or repaired equipment, not yet placed into service, and to devices undergoing type approval.

SECTION 4027.5 UR. USER REQUIREMENTS – This section incorporates the user requirements found in existing California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2. Electric Watt-Hour Meters, and California Public Utilities Commission (CPUC) Decision D 05-05-026.

This section incorporates certification requirements for new submeter installations to ensure that submeters are safely installed and accessible in accordance with permit requirements, requirements in applicable California Public Utilities Commission decisions, and with applicable serving utility installation and tariff rules. The required certification also confirms that the property can be legally submetered, and that the submeter system owner follows applicable tariff rules of the serving utility as approved by the CPUC Decision D 05-05-026

These requirements provide for safe and accurate metering installations for installers, users, the public, and officials and ensure tenants are only charged at legal rates and can apply for and receive any rate relief that they are qualified to receive by applicable rules of the CPUC and serving utility.

UR.1. Selection Requirements. This section lists the requirements for meter class, suitability of equipment and instrument transformer ratio. The meter is also required to correctly match the service load so it will not frequently be used in a range where not tested and inaccurate.

UR.2. Installation Requirements. This section details requirements for mechanical and electronic submeter installations and provides for certification from the California Public Utilities Commission or the serving utility that the meter is properly installed, the property can legally submeter a tenant’s premise, and

that the proper rates, including any rate relief programs, are in place before the submeter can be used for commercial purposes.

UR.3. Use Required. This section specifies that a submeter is required when a tenant is not directly served by the serving utility and is charged for electric energy consumption separate from the fixed periodic rent.

Estimated Cost or Savings to Public Agencies or Affected Private Individuals or Entities

The Department of Food and Agriculture has initially determined that this proposal does not impose a mandate on local agencies or school districts.

The Department has also initially determined that no savings or increased costs to any State agency, no reimbursable costs or savings under Part 7 (commencing with Section 17500) of *Division 8* of the Government Code to local agencies or school districts, no nondiscretionary costs or savings to local agencies or school districts, and no costs or savings in federal funding to the State will result from this action.

The cost impact of the changes in the regulations on private individuals or businesses is expected to be insignificant.

The Department has initially determined that the proposed action will not have a significant adverse economic impact on housing costs or businesses, including the ability of California businesses to compete with businesses in other states. The Department's initial determination that this action will not have a significant adverse economic impact is based on the fact that this regulation does not place new requirements or restrictions on businesses.

Assessment

The Department has made an assessment that the proposed regulation sections would not: (1) create or eliminate jobs within California; (2) create new business or eliminate existing businesses within California; and (3) affect the expansion of businesses currently doing business in California.

Alternative Considered

The Department must determine that no alternatives considered would be as effective in carrying out the purpose of this proposed regulation or would be as effective and less burdensome to the affected private persons other than the proposed regulation.

This regulatory action has no significant adverse economic effect on businesses.

Technical Theoretical and/or Empirical Study, Reports, or Documents

The Department has relied on the following for these regulation amendments:

California Code of Regulations, Title 4, Division 9, Chapter 1, Article 2.2. Electric Watt-Hour Meters.

American National Standard for Electric Meters, Code for Electricity Metering, ANSI C12.1- 2001

American National Standard for Watthour Meters, ANSI C12.10-1997

National Electrical Manufacturers Association, NEMA EI 21.1-1993

Handbook for Electricity Metering, ninth edition

California Public Utilities Commission Decision D 05-05-026

California Public Utilities Code Sections 739.5 and 12821.5

National Institute of Standards and Technology Handbook 44